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Financial Management

ECONOMIC ANALYSIS

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction implements AFPD 65-5, *Cost and Economics*, and DoD Instruction 7041.3, *Economic Analysis for Decision Making* ,November 7, 1995. It gives specific instructions on economic analysis (EA) for Air Force management and financial decisions.

SUMMARY OF REVISIONS

This is the first revision of AFI 65-501. It updates, clarifies, and streamlines previous guidance on economic analysis.

Chapter 1

ECONOMIC ANALYSIS

1.1. Definition. An EA helps us make rational choices among competing alternatives. It does not replace the judgment of the decision maker, but rather aids that judgment. Usually we have alternate ways of meeting a goal, and each alternative costs something (resources, factors, inputs) and produces some benefits (results, revenues, outputs). A good EA systematically examines and tells us about costs, benefits, and risks of various alternatives. This systematic approach reduces the incidence of serious omissions or the introduction of personal bias.

1.2. Requirements.

1.2.1. The Air Force requires an EA when:

1.2.1.1. Deciding whether to commit resources to a new project or program with total investment costs over $1,000,000 or annual recurring costs over $250,000 for at least four years. These dollar thresholds also apply to a group of projects which are so closely related that they are logically considered a single entity. NOTE: Functional offices of primary responsibility (OPRs) for programs may specify alternative thresholds for projects for which they are responsible. For example, different thresholds apply for military construction (MILCON) and military family housing (MFH) projects (see paragraph **2.2.**)

1.2.1.2. Proposed changes to an ongoing project will push project investment costs over $1,000,000 or annual recurring costs over $250,000 for at least four years (if no EA was previously performed).

1.2.1.3. Proposing a housing or utilities privatization project, regardless of the amount of the investment cost. Consult the SAF/FM home page for special guidance on these type EAs.

1.2.1.4. A functional user or program office is procuring, modernizing or upgrading a material solution for a Major Automated Information System (MAIS), Automated Information System, National Security System (NSS), Weapon Systems with embedded IT and or Command and Control Systems that are not themselves IT systems to support the Clinger-Cohen Act.

1.2.1.5. Directed by Secretariat or Air Staff, or a commander of field units. Functional OPRs must coordinate any new requirement for recurring EAs with SAF/FMC.

1.2.2. An EA is not required if:

1.2.2.1. The costs of conducting the analysis clearly outweigh the potential informational benefits accruing to the decision maker. For example, if a commander requests an EA but if the dollar amount doesn't meet the threshold that requires an EA, a financial analysis could be done which does not have to meet the requirements of this instruction.

1.2.2.2. The Office of the Secretary of Defense (OSD) or higher authority directs a new or modified program and specifies how to accomplish program goals. Congressional inserts which specify the alternative which must be taken (e.g., build new rather than renovate) do not require an EA.

1.2.2.3. Legislation specifically exempted the project from an EA.

NOTE: The first two of the above conditions do not apply to MFH. See para **2.2.** for guidance on MFH EAs.

1.2.3. When an activity does not conduct an EA for reasons in **1.2.2.**, a waiver or exemption from the requirement to do an EA is appropriate. See para **1.6.** for more information about waivers/exemptions. The activity must coordinate the MFR with the comptroller office responsible for EAs. The sponsoring activity retains the coordinated MFR on file until the project which is the subject of the MFR has been completed.

1.3. Responsibilities:

1.3.1. **SAF/FMC** The Deputy Assistant Secretary of the Air Force (Cost and Economics) is the office of primary responsibility (OPR) for Air Force economic analysis. This office:

1.3.1.1. Provides Air Force-wide guidance on EA policy and procedures.

1.3.1.2. Coordinates on EA instructions developed by Secretariat or Air Staff functional offices.

1.3.1.3. Reviews analyses for weapons systems that require Defense Acquisition Board (DAB) or Air Force Systems Acquisition Review Council (AFSARC) approval.

1.3.1.4. Reviews communications-computer system requirements that require AF/XOR approval.

1.3.1.5. Reviews MCP, MFH, and real property maintenance analyses as requested by HQ USAF/ILE.

1.3.1.6. Reviews all Air Force Productivity Investment Fund (PIF) submissions; reviews Fast Payback Capital Investment (FASCAP) Fund submissions on an exception basis as requested by AF/DPM or HQ AFMIA.

1.3.1.7. Reviews, as requested by HQ USAF/ILV, nonappropriated fund construction and equipment analyses for projects presented for Air Force Services Board approval and funding.

1.3.1.8. Reviews EAs at the direction of the Secretary of the Air Force, SAF/FM or the Chief of Staff.

1.3.1.9. Reviews EAs in support of Major Automated Information Systems (MAIS). (Air Force Cost Analysis Agency, a FOA to SAF/FMC, is responsible for this.)

1.3.1.10. Reviews EAs requiring Office of the Secretary of Defense (OSD) or SAF/AQ approval.

1.3.1.11. Reviews all business case analyses per request of -AF-CIO/P.

1.3.1.12. Promotes and monitors economic analysis training.

1.3.1.13. Maintains the SAF/FM Home Page which provides cost factor updates, models for economic analysis and cost estimating, and news of developments in financial analysis.

1.3.1.14. Reviews and concurs, as appropriate, on requests for waivers from EA requirements forwarded from Secretariat and Air Staff program offices.

1.3.2. **Other Secretariat and HQ USAF Functional Offices.** Offices serving as program OPRs:

1.3.2.1. Decide if an EA is required or advisable before approving any proposal.

1.3.2.2. Issue special guidance, coordinated with SAF/FMC, for EAs in their functional area.

1.3.2.3. Receive EAs from major commands (MAJCOM), review them from their functional perspective, and decide whether the EAs need SAF/FMC review.

1.3.2.3.1. When the EAs need SAF/FMC review, forward the request along with a functional evaluation of the project, including evaluation of the reasonableness of cost and benefit estimates.

1.3.2.3.2. If functional or SAF/FMC review results in questions, forward these questions to the MAJCOM office proposing the project.

1.3.2.4. Review and concur, as appropriate, with MAJCOM requests for a waiver from EA requirements.

1.3.3. **MAJCOM/FM.** The Comptroller will designate an EA OPR (typically the financial analysis office) responsible for EAs within the command. The OPR:

1.3.3.1. Manages the command's EA program, including monitoring the training of analysts, providing command guidance to installations preparing EAs, and all liaison with SAF/FMC.

1.3.3.2. Reviews and certifies all EAs MAJCOM functional offices forward to the Secretariat or Air Staff.

1.3.3.3. Provides a representative as a nonvoting member on the MAJCOM Facilities Board. This allows financial analysis offices to be aware of projects as they are developed and proceed through the chain of command from base level to MAJCOM headquarters. It also facilitates the accumulation of costs and preparation for possible future workload.

1.3.3.4. Concurs, as appropriate, with requests for a waiver from EA requirements

1.3.3.5. Certifies EAs requiring MAJCOM or HQ USAF automated data processing (ADP) system manager approval.

1.3.4. **MAJCOM Functional Offices:**

1.3.4.1. Review EAs and coordinate on the Certificate of Satisfactory Economic Analysis.

1.3.4.2. Forward the EA to their counterparts at Secretariat or Air Staff after certification by the MAJCOM financial analysis office (see AFMAN 65-506, *Economic Analysis*).

1.3.4.3. Concur, as appropriate, on requests for waivers from EA requirements and forward the request to Secretariat or Air Staff counterparts.

1.3.5. **Installation Functional Offices.** Base or wing level functional offices:

1.3.5.1. Determine the need for an EA based on criteria in paragraph **1.2.** (paragraph **2.2.** for MILCON and MFH projects; paragraph **2.6.** for PECI projects).

1.3.5.2. Notify the financial analysis office in writing when an EA is required.

1.3.5.2.1. To allow time for accumulation of data, notify as soon as possible after the requirement is determined.

1.3.5.2.2. Document in the request a definition of the objective of the EA, the scope of the proposed project (quantified to the extent possible), a description of all feasible alternatives to achieve the objective, and a description of any possible sources of costs, including databases,

records or manuals. If applicable, provide the rationale for any alternatives considered infeasible.

1.3.5.3. Serve as the office of collateral responsibility (OCR) for preparing the EA. EXCEPTIONS: NAF projects and FEAs for automated information systems. The Services Division is OPR for preparing the NAF EAs. The functional office is OPR for automated information system EAs.

1.3.5.4. Review EAs and coordinate on the Certificate of Satisfactory Economic Analysis.

1.3.5.5. Provide support to the EA preparation process, including the reasonableness of estimated costs and benefits.

1.3.5.6. Prepare an MFR if an EA is not required and coordinate with the financial analysis office; retain the memo on file until the related project is completed.

1.3.5.7. Send written requests for waivers from EA requirements to the base level financial analysis office. Waiver requests must adequately explain and document the reason why an EA is not necessary according to paragraph **1.2.1.** or **2.2.3.**

1.3.5.8. The base functional office forwards the request for a waiver to MAJCOM functional counterparts.

1.3.6. **Installation Financial Analysis Offices.** Base or wing level financial analysis offices:

1.3.6.1. Are OPR for preparing the EA. *EXCEPTIONS:* See paragraph **1.3.5.3.**

1.3.6.2. With the requesting functional office, name as OCRs those offices necessary to formulate alternatives, make assumptions, and provide operational or cost data.

1.3.6.3. Chair a working group of OCRs which establishes and monitors milestones for data collection and EA preparation.

1.3.6.4. Ensure that the base or installation comptroller certifies the completed EA.

1.3.6.5. Send a nonvoting representative to installation Facilities Boards. This representative keeps financial analysis offices aware of projects as they develop, prepares them for future EAs, and lets functional offices know when they need to collect data on historical costs, operational workload or other data.

1.3.6.6. Send a representative to Services NAF Finance Committee meetings.

1.3.6.7. Concur, as appropriate, on request for waivers from an EA requirement.

1.4. Certification. Certification by comptroller personnel means that an EA has been prepared according to this instruction. Certification does not mean that the comptroller organization endorses the recommendation contained in the EA. Only responsible functional officials can judge whether the recommendation is appropriate. Certification by comptroller personnel attests to the proper use of economic principles in the analysis and to the adequacy of documentation such that the EA is a stand-alone document. Certification by functional personnel indicates that the assumptions, reasoning and cost-benefit assessments in the EA are consistent with their area of technical expertise. Functional managers and reviewers at each stage of the review process must sign the Certificate of Satisfactory Economic Analysis. EAs forwarded to Air Staff or Secretariat must give evidence of MAJCOM certification.

1.4.1. Certifying officials include the Comptroller and the program office equivalent at base level and the financial analysis and program office equivalent at MAJCOM level. Other base level or MAJCOM offices which have provided significant inputs should also coordinate on the Certificate of Satisfactory Economic Analysis.

1.4.2. AFMAN 65-506 contains an EA Certification Checklist.

1.4.3. If an office cannot certify the EA, provide a statement of nonconcurrence to all other OCRs.

1.4.4. Do not forward an EA outside the Air Force without MAJCOM certification and the concurrence of SAF/FMCE.

1.5. Reporting and Review Procedures. EAs sent to Air Staff or Secretariat are processed through functional channels. For example, MILCON EAs are forwarded from engineering offices at MAJCOM to their counterparts at Air Staff or Secretariat, who may request SAF/FMCE review after their own review.

1.5.1. Functional offices must provide their comments to SAF/FMCE along with their request for SAF/FMCE review.

1.5.2. When functional offices send an EA to high levels (e.g., Congress, OSD, or senior Air Force officials) and the EA needs revision, SAF/FMCE sends comments through functional channels. In cases of tight deadlines, SAF/FMCE may, in consultation with Air Staff and Secretariat functional offices, request revisions to EAs directly from MAJCOM financial analysis offices.

1.6. Waivers/Exemptions:

1.6.1. OSD Comptroller has authority to grant waivers from EA requirements.

1.6.2. Since FM offices are OPR for EAs, they are also OPR for preparing waiver requests from EAs. Request waivers based on the criteria in paragraph **1.2.1.** or **2.2.3.** Requests for waivers must be coordinated with program OPRs. Use the format in AFMAN 65-506 for waiver requests. Note: The MILCON program has additional requirements for waiver documentation which are the responsibility of engineering offices.

1.6.3. MAJCOM financial analysis offices and functional counterparts must coordinate on an installation's request for a waiver from an EA.

1.7. Documentation Requirements:

1.7.1. Thoroughly document your EA so reviewers can replicate it. Reviewers must be able to trace costs to the most basic inputs and units of measure. Cite sources and dates for rates, factors, and estimates, including publications, memos, and letters. For estimates based on expert opinion, include the individual's office symbol, email address, and phone number.

1.7.2. If an alternative in an EA uses innovative methods, include in the EA an explanation of the method and the rationale for using it.

1.7.3. Clearly identify any funding or budget constraints. Keep in mind the funding requirement for a project may not be the same as the costs contained in the supporting EA. Make sure the responsible budget analyst is aware of funding requirements.

1.7.4. Use formats in AFMAN 65-506 for EA documentation, or adapt them to fit the unique aspects of your analysis. These formats are similar to the formats generated by the software ECONPACK

FOR WINDOWS, which is available on the SAF/FM home page. This software generates output for an EA which OSD and Congressional staff are familiar with, and is recommended, but not required.

1.7.5. Be sure that you document data so well that the analysis can bear very close scrutiny by independent authority. To facilitate review, number all pages in an EA, including attachments.

1.7.6. Significantly Different Alternatives. If the EA compares contractor and government performance, the analysis should, if applicable:

1.7.6.1. Explain why the government's response to a functional specification significantly differs from the contractor's proposed method of construction or operation (for example, using coal instead of nuclear power for an energy plant).

1.7.6.2. Explain any significant differences between the government's and the contractor's costs. Briefly explain in the executive summary and elaborate in the body of the EA.

1.8. EA Education and Training:

1.8.1. The financial analysis course at Keesler AFB provides an introductory section on economic analysis.

1.8.2. The Air Force relies on Defense Acquisition University (DAU), Rock Island, Illinois, for more extensive courses in economic analysis. DAU has separate courses for analysts and managers. Contact DAU directly, or SAF/FMCEE, for information.

1.8.3. Cost analysis courses at the Air Force Institute of Technology will improve analysts' understanding of estimating techniques and inflation, though these courses are designed for weapon systems' estimating rather than economic analysis.

1.8.4. SAF/FMCE has developed a web based training program that includes a section on economic analysis. This training program is available through the FM website.

Chapter 2

SPECIAL ANALYSIS

2.1. Communications-Computer Systems: AFI 33-103, *Requirements Development and Processing,* explains procedures for validating and approving communications-computer system programs. When a project needs an EA based on paragraph **1.2.**, the EA accompanies a Communications-Computer Systems Requirement Document (CSRD) or Mission Need Statement.

2.1.1. Major Automated Information System (MAIS), Automated Information System, National Security System (NSS), Weapon Systems with embedded IT and or Command and Control Systems that are not themselves IT programs require an EA based on the Clinger-Cohen Act of 1996.

2.1.1.1. Notify the Air Force Cost Analysis Agency, FMI division, and AF-CIO/P six months prior to a milestone decision requiring Clinger-Cohen confirmation.

2.1.1.2. Prepare the EA in accordance to the guidance provided by OSD Program Analysis & Evaluation Office regarding MAIS return on investment calculations.

2.1.1.3. The AFCAIG process will approve the EA and the resultant Return on Investment (ROI) that will be included in the Clinger-Cohen confirmation to the AF CIO (Chief Information Officer).

2.2. MILCON, MFH, and Real Property Maintenance Projects

2.2.1. Installation or MAJCOM Engineering and Services notifies financial analysis offices when an EA must be accomplished because:

2.2.1.1. Investment costs equal or exceed $2 million (except MFH and relocatable buildings).

2.2.1.2. Investment costs are less than $2 million, but the principal justification for a MILCON project is economic (i.e., the main purpose of the project is to reduce costs, increase efficiency or enhance benefits relative to costs).

NOTE: Real Property Maintenance projects only require EAs if the investment costs equal or exceed $2 million. Relocatable buildings follow the threshold in paragraph **1.2.**

2.2.1.3. The facility would improve organizational or operational efficiency, including consolidation of like organizations into one facility.

2.2.1.4. The project includes disposing or major revitalizing of many facilities which are energy inefficient or require excessive maintenance and repair.

2.2.1.5. The project is housing improvement and the most expensive unit costs more than the legal limit.

2.2.1.6. The project replaces existing family housing either by new construction, build-to-lease or rental guarantee.

2.2.1.7. The project is a candidate for housing privatization or utilities privatization.

2.2.1.8. The project involves relocatable buildings supporting short-term facility requirements and meets the thresholds in paragraph **1.2.** The financial analysis office is OPR for this type of EA.

When a relocatable building project does not meet the thresholds in paragraph **1.2.**, the civil engineers are OPR for a cost analysis and the financial analysis office is OCR.

NOTE: Do not split projects to avoid this instructions thresholds.

2.2.2. An EA is not required if project life cycle costs are less than $1 million.

2.2.3. You may request a waiver from an EA if:

2.2.3.1. The project corrects problems or violations involving health, safety, fire protection, pollution, or security. Not all projects in these areas are automatically exempt. Problems warranting exemption should be serious and urgent such that the time required to prepare and process an EA would unduly prolong a hazardous situation. If Environmental Protection Agency or Occupational Safety and Health Administration directives or rulings are involved, document these facts. If a serious and urgent hazard exists, expedite the waiver process to prevent injury.

2.2.3.2. The project is directed by statute, by regulation, or by higher authority than DoD, and the provisions of such direction preclude choices among alternatives to meet the requirement.

2.2.3.3. There is only one way to meet a valid requirement. This case is rare, since any alternative meeting minimum requirements, including maintenance of the status quo, is feasible if it cannot be excluded on noneconomic grounds.

2.2.4. Attach MILCON EAs to DD Form 1391, **FY__ Military Construction Project Data,** when an EA is required by paragraph **2.2.**An EA must accompany DD Form 1391 for MFH, with documentation from the Tri-Service Family Housing Cost Model. Data on the DD Form 1391 must track to the EA.

2.2.5. Preliminary EAs:

2.2.5.1. Financial analysis must be part of program planning when a project is first considered. A preliminary EA is a first effort at the elements of economic analysis, including: statement of the problem or objective, assumptions, alternatives, determination of feasible or infeasible alternatives, an estimation of the benefits and costs of each feasible alternative, and consideration of the riskiness of the recommendation relative to key variables. The Air Force does preliminary EAs because it is not practical to do a complete EA for projects that are only being considered.

2.2.5.2. Do a preliminary EA after an installation Facilities Board (FB) has established a requirement for a project, but before the installation FB has chosen an alternative. Develop the analysis as the engineers develop the DD Form 1391.

2.2.5.3. Use professional judgment when deciding the extent of a preliminary EA. Remember the goal is to facilitate a good management decision among possible alternatives within a project, as well as among competing projects. Only use techniques that are appropriate to the particular project. For example, use present value analysis if the timing of cash flows differs greatly among alternatives. AFMAN 65-506 contains a suggested format for a preliminary EA.

2.2.5.4. If the MAJCOM FB supports a project, complete a full EA to accompany the finalized proposal. "Fully developed" EAs must meet the requirements of AFMAN 65-506.

2.2.6. The EA process must be a team effort at base, MAJCOM and Air Staff/Secretariat levels. EA certification requires the efforts of the user, the engineering staff, comptroller and other functional area personnel. Personnel in these organizations have primary or collateral responsibility for various

efforts that support the EA process. Consult **Attachment 2** for major EA tasks and organizational responsibilities.

2.2.7. Under a tri-service agreement, EAs for the design phase of construction follow special guidance. Consult AFMAN 65-506.

2.3. Energy Projects. Special instructions apply to energy projects:

2.3.1. Evaluate all energy projects in constant dollars, including lease-purchase decisions. Since energy price changes in energy sectors are apt to differ from price changes in other sectors, use Department of Energy (DOE) indices, published annually (NISTIR 85-3273-15 Rev 4/00) and found on the SAF/FM web site, under Economic Analysis.

2.3.2. Use the following guidelines for Energy Conservation Investment Program (ECIP) EAs of retrofits to existing energy systems:

2.3.2.1. Base all analyses on an economic life of 25 years or the life of the retrofit or of the facility, whichever is less.

2.3.2.2. Use the DOE published escalation rates for energy.

2.3.2.3. ECIP projects will use the published discount rates as published in the annual supplement to NIST handbook 135 “Energy Price Indices and Discount Factors for Life-Cycle Cost Analysis” NISTIR 85-3273-15(check with your engineering office). The general guidance on ECIP projects can be found in Air Force Energy Program Procedural Memorandum (AFEPPM) 94-4, “Investment Opportunities for Energy and Water Conservation Projects.”

2.3.3. Analyze lease-purchase decisions and private sector financed leases or service contracts involving energy projects using the following guidance:

2.3.3.1. Use the ECIP-approved discount rate for lease-purchase EAs.

2.3.3.2. Do not include any adjustment for special tax advantages.

2.3.3.3. Escalate the government MCP alternative estimate using DOE rates for comparison with private sector financed (e.g., lease, service contract) alternatives. Take the lessor or contractor bid at face value (i.e., not escalated, since this constitutes the actual commercial bid).

2.3.3.4. ECIP projects will have a Simple Payback (SPB) of 10 years or less with a minimum Savings Investment Ratio (SIR) of 1.25 to meet DoD criteria. (Estimated SPB time is the number of years required for the cumulative value of energy cost savings less future non-fuel costs to equal the investment costs of the building system without consideration of future price changes or discount rates. For example, invest $100,000 at an annual savings of $20,000. SPB is investment divided by savings, so the SPB would be 5 years. SPB does not take into account the time value of money.)

2.3.4. Analyze both shared savings and shared investment projects using the following guidelines:

2.3.4.1. Use the discount rate published for ECIP.

2.3.4.2. Use DOE energy price escalation rates.

2.3.5. Analyze energy plant conversion projects using the following guidelines:

2.3.5.1. Discount projects using a renewable energy source at the rate for ECIP.

2.3.5.2. Discount projects using fossil (nonrenewable) fuel at the rate published by OMB.

2.3.5.3. Use DOE energy indices.

NOTE: EAs which are not specifically energy projects are not required to use DOE energy indices.

2.4. Lease-Purchase Decisions. OMB Circular A-94 distinguishes two types of decisions regarding lease-purchase:

2.4.1. The decision to acquire an asset. This involves cost-benefit analysis to show that acquiring the asset is reasonable.

2.4.2. The decision to lease or purchase the asset. In this lease-purchase type of analysis, benefits are often essentially the same. In many Air Force analyses, mission need has already determined the requirement. In this situation, only a lease-purchase analysis would be required (i.e., an EA with two alternatives, lease and purchase). If an organization has not determined a requirement for an asset, then lease and purchase may be two alternatives among many. In this case the EA in effect combines a cost-benefit analysis and lease-purchase analysis by developing one EA demonstrating the alternative with the best benefit relative to cost.

2.4.3. When estimating for major facilities, the Air Force normally does not have authority to solicit bids both for a lease or service contract alternative and for a purchase alternative. Under these circumstances, one estimation method is:

2.4.3.1. Estimate a life-cycle flow of funds for the purchase alternative.

2.4.3.2. Compare the present discounted value of contractor bids for the lease or service contract with the present discounted value of the purchase alternative. ***IMPORTANT:*** Work with contracting offices to develop such bids, since it must be made clear that the government's request for information may not lead to an offer.

2.4.4. All EAs involving lease-purchase analysis follow special guidance outlined below. Consult AFMAN 65-506 for more detailed guidance on lease-purchase analysis.

2.4.4.1. Leases are often "level term." Their cost is set per month or year over a number of months or years. The lease terms are in effect stated in nominal (i.e., inflated) dollars. For this reason, EAs involving lease-purchase analysis are often accomplished in nominal dollars. Discount these nominal dollars using the nominal Treasury borrowing rate on marketable securities of comparable maturity to the term of the lease. The rates are updated annually when the President presents his Budget, and are found on the SAF/FM web site.

2.4.4.2. If lease costs are stated in constant dollars, use constant dollars in the EA and discount at the real Treasury rate found on the SAF/FM web page.

2.4.4.3. Conduct sensitivity analysis showing the effect on the analysis of changing the discount rate by plus and minus 25 percent.

2.4.4.4. When the term of a lease or service contract differs from the economic life of the asset under the purchase option, estimate asset terminal value and include it in the purchase alternative as a benefit (negative cost) in the final period of the analysis

2.4.4.5. Add to the cost of the lease the cost to the Treasury of any special tax benefits associated with a lease. Examples: highly accelerated depreciation allowances or tax-free financing. Con-

sider current tax laws applicable to a lessor to determine whether or not an adjustment is appropriate in a particular EA. Because tax laws change, consult with legal and contracting staff. If a particular leased asset enables a lessor to take advantage of accelerated deprecation tax benefits, increase the contract bid to offset these losses to the Treasury. In most accelerated depreciation schedules, the amount of the special tax advantage is only the portion of the total allowance for depreciation in excess of "normal" economic depreciation. In such cases, the calculation of normal economic depreciation is an annual amount equaling acquisition price divided by economic life.

NOTE: Do not consider special tax benefits when analyzing energy projects.

2.5. Commercial Activities (A-76) Cost Comparisons. A cost comparison steering group, chaired by manpower with comptroller staff representation, conducts cost comparisons under AFI 38-203 between in-house or commercial (contract) performance.

2.5.1. Comptroller staff provides technical support as requested by manpower offices.

2.5.2. Consult AFI 38-203, *Commercial Activities Program* for guidelines.

2.5.3. AFI 38-203 requires an informal cost-benefit analysis for all cost comparisons to see if providing government property to a contractor is in the government's best interest.

2.5.3.1. Manpower offices task financial analysis offices to provide such analysis as needed, and assist as necessary with the analysis.

2.5.3.2. AFMAN 65-506 gives guidance on this type of analysis.

2.5.3.3. Data considered in the analysis includes:

2.5.3.3.1. Specific property/equipment under consideration.

2.5.3.3.2. Acquisition cost.

2.5.3.3.3. Item age.

2.5.3.3.4. Historical usage and maintenance costs.

2.5.3.3.5. Other relevant information available from the OPR or other sources.

2.5.3.4. The analysis must not give an advantage or disadvantage to either in-house or contract competitors.

2.5.4. Large cost comparisons (with 75 or more full-time equivalents in the activity prior to undergoing cost comparison) require an analysis of the impact of the cost comparison on the local economy. AFMAN 65-506 contains guidance on this analysis. Include the results of this analysis in RCS: HAF: XPM(AR) 8001 Instructions Cost Comparison or Direct Conversion Decision Results Memorandum . This report is designated emergency status code C2. Continue reporting during emergency conditions, normal precedence. Submit data requirements in this category as prescribed, or as soon as possible after submission of priority reports. Discontinue reporting during MINIMIZE.

2.6. Productivity Enhancing Capital Investment (PECI) Program. This program provides investment funding for projects that reduce subsequent O&M costs. Funding is limited each year, and the available pool is apportioned among competing requests based on project rankings. AFI 38-301, *Productivity Enhancing Capital Investment* completely describes the PECI program, which includes two funds: Fast Payback Capital Investment (FASCAP) and Productivity Investment Fund (PIF). The appropriate pro-

gram for a particular proposal depends on dollar amount of the initial investment and payback period. Consult AFI 38-301. The FASCAP is for projects under $200,000 and requires MAJCOM coordination only. The PIF program involves projects equal to or greater than $200,000 and requires Air Staff coordination.

2.6.1. Submit FASCAP proposals on AF Form 2288, **Request for Fast Payback Capital Investment (FASCAP) Funds,** with supplementary attachments.

2.6.1.1. Items 9 (Ownership/Savings), 10 (Investment Costs), and 12 (Payback Period) of AF Form 2288, along with attached supporting documentation, constitute the cost analysis for each FASCAP proposal. The submitting organization, with the assistance of the financial analysis office at the corresponding level, prepares the cost analysis. Items 9 and 10 on AF Form 2288 provide for specifying the general costs and benefits of the program, with particular attention to manpower implications. Only savings that are reductions of government outlays may be used to justify FASCAP applications. Cost figures entered in items 9, 10, and 12 must be both complete and accurate. Attach documentation as necessary to support and verify the sources for these entries. Attach worksheets showing all computations supporting these figures according to AFI 38-301.

2.6.2. Submit PIF proposals on AF Form 2276, Request for Productivity Investment Fund (PIF) Funds, with supplemental attachments.

2.6.2.1. HQ USAF/DPMR ranks competing PIF projects based primarily on shortest payback, highest internal rate of return (IRR), return on investment and manpower resources saved. One way to view IRR is the interest rate at which you could borrow money to finance an initial capital investment, so that the project would exactly break even. Technically, IRR is the discount rate which causes the net present value (NPV) of a project to equal zero.

2.6.2.2. An EA, including the project's IRR, must accompany each PIF proposal. The OPR for the EA is the financial analysis office at the same organizational level as the office submitting the proposal. The EA must compare costs of the status quo to those of the PIF proposal. For a PIF proposal, no other alternatives besides status quo and the PIF investment proposal are required.

2.6.2.2.1. The IRR for each PIF proposal covers a period of at least 4 years. The IRR is entered on to AF Form 2276 in block 23 as one of the economic statistics.

2.6.2.3. The figures entered into blocks 11 (Investment Data), 12 (Distribution of Investment Costs), 14 (Savings Information), 15 (Manpower Savings), 16 (Average Annual Savings), 17 (Lifecycle Savings), 22 (Classification of Savings) and 23 (Economic Statistics) of the AF Form 2276 all must match the figures used in the EA. Only savings that are reductions of government outlays may be used to justify PIF applications. Cost figures entered in blocks 11, 12, 14, 16, 17,and 22 must be consistent, complete and accurate. Figures entered in Block 23 sections B-D must be derived using the formulas noted on the AF Form 2276. Attach documentation necessary to support and verify the sources for these entries. Attach worksheets showing all computations supporting these figures and supporting the EA.

2.7. Major Weapon System Warranty Cost-Benefit Analysis. Section 2403 of Title 10 requires that certain warranties cover major weapons systems unless the Secretary of Defense determines that the proposed warranty is not cost-effective. If a cost-benefit analysis (CBA) reveals that warranty coverage does not improve life cycle costs (LCC), request a waiver of warranty coverage requirements.

2.7.1. DFARS 46.770-8 requires a CBA.

2.7.2. DFARS 46.770 and AFFARS 46.770 elaborate warranty policy and procedures.

2.7.3. AFMAN 64-110*, Manual for Weapon System Warranties*, governs Air Force policy.

2.7.4. The principal criterion for determining LCC advantage is the discounted present value of expected program costs and benefits, estimated both with warranty coverage and without warranty coverage, and (if appropriate) with partial warranty coverage.

2.7.5. Plan sufficient lead time to complete the detailed work required in a warranty CBA. Start early if it will support contract negotiations. Intermediate CBA findings are very valuable in establishing government negotiating positions; the CBA identifies expected major cost drivers and potential failure nodes.

2.7.5.1. You may do the CBA as early as the demonstration and validation phase and then update the CBA during full-scale development and source selection or negotiations for the production contract. At a minimum, accomplish the CBA before release of the Request for Proposal for the production contract and update after receipt of proposals with the contractor's proposed warranty price.

2.7.5.2. The OPR for life-cycle cost analysis of the program is OPR for the warranty CBA, unless the program manager assigns responsibility elsewhere. The program manager (SPO director, project manager, etc.) ensures the CBA is initiated as soon as system technical design is well enough established to allow LCC estimation.

2.7.5.3. OCRs are any other organizations with information necessary to develop the life-cycle cost model. OCRs usually include engineering and logistics staffs.

2.7.6. A computer model is available to do the CBA. Contact AFMC/FM for information. Consider information in the Warranty Activity Report, if available, when doing the CBA.

2.7.7. AFMAN 65-506 has an example of a Certificate of Satisfactory Warranty Cost-Benefit Analysis.

2.7.8. Estimate LCC for the system or component without warranty coverage. Then estimate LCC under full or partial warranty coverage.

2.7.8.1. Break down the system or item under consideration into its constituent parts, based on the expected major O&S cost drivers and associated failure nodes. Items considered for warranty coverage may be a combination of new components and of components similar to those in historically procured items. Therefore, analysts may face a combination of historical data and engineering forecasts to identify cost drivers and failure nodes.

2.7.8.2. Estimate the expected costs over time for each failure node, based on expected failures and anticipated cost per failure.

2.7.8.2.1. Use statistical methods or mathematical models to relate failures at each node to variables measuring system deployment and operation (e.g., shelf life, operation cycles, hours of operation, or presence or absence of special operating conditions).

2.7.8.2.2. Estimate the mean time between failures (mean operating cycles between failures, etc.) and variables which are related to failure.

2.7.8.2.3. Build estimates of the cost of a failure at each mode from historical data or projections, as applicable.

2.7.8.2.4. Sum up monetary LCCs as the total of the costs of each failure node.

2.7.9. Estimate LCCs for the alternative including warranty coverage. The basic procedure is the same as above: break down the system or item into its major cost components. This is particularly useful for addressing whether proposed warranty provisions should be accepted.

2.7.9.1. Estimate the costs and benefits of each warranty clause or provision.

2.7.9.1.1. Consider benefits to the government of warranty implementation plans and procedures.

2.7.9.1.2. Consider administrative costs of the warranty and potential claims that the warranty is likely to cover. When possible, identify administrative costs with specific warranty provisions, to increase the precision of the warranty assessment.

2.7.9.2. Consider warranty effects on system or item cost components or performance characteristics outside warranty coverage. For example, consider such factors as the effects of warranty provisions on system field performance or the implicit cost differences due to different turnaround times between contractor and in-house repair.

2.7.10. A warranty which stipulates future government actions and is offered without additional initial acquisition cost to the government requires a CBA.

2.7.11. AFMAN 65-506 contains an example of a Request for Waiver of Warranty Cost-Benefit Analysis. The example provides conditions when you may request a waiver.

2.8. Economic Analyses of Overseas Activities. Express the LCCs of EAs for overseas activities in US dollars.

2.8.1. SAF/FMCE can provide forecasts of foreign exchange rates for use in Air Force EAs upon request.

2.8.2. AFMAN 65-506 contains additional information on exchange rates.

2.9. Private Sector Development (PSD). PSD projects use private sector resources to provide facilities and/or services for the Air Force. The requirements for analysis supporting PSD projects depend upon the most recent legislation authorizing the type of project. Commands must coordinate the development of any PSD proposals for MFH and Utilities projects with AF/ILE. Consult your civil engineering office and the SAF/FM web site for current analysis requirements. Other installation related proposals should be coordinated with SAF/IEI.

2.10. Analysis of Alternatives (AoAs). AoAs are required for analysis of weapons systems according to DoD Instruction 5000.2, *Operation of the Defense Acquisition System (Including Change 1)*May 12, 2003. System Program Offices (SPOs) must notify SAF/FMC of all AoA efforts for ACAT I or IA programs. Depending on resource availability, SAF/FMC may simply advise the AoA team, assess the methodology and rigor of the AoA cost estimate, or may perform an independent estimate of costs of the alternatives. All AoA estimates are considered trade quality estimates unless an independent cost analysis team prepared the estimate and an Air Force Cost Analysis Improvement Group (CAIG) has reviewed and approved it.

2.11. Mechanized Materials Handling Systems (MMHS) and Storage Aids Systems (SAS) EAs in support of the acquisition of MMHSs and SASs generally follow this instruction and AFMAN 65-506. AFMAN 23-110, *USAF Supply Manual* contains special considerations and guidance in preparing EAs for these systems.

2.12. Program Evaluation (PE). PE is an economic analysis of on-going operations to ensure that established goals and objectives are being attained in the most cost-effective manner. PE compares actual performance with stated program objectives. Economic analysis in the stricter sense aids in identifying alternate uses of available resources before decisions are made. PE identifies the outputs of actual performance: benefits, utility, effectiveness, performance and work measures. From a broader organizational perspective, an objective of PE is to review programs to determine if they should be continued, modified or ended. Programs are selected for evaluation based on scope, cost, and relative sensitivity. A program is evaluated only if the benefits of the evaluation (or potential cost savings of modifying the existing program) clearly outweigh the cost of collecting the data and conducting the evaluation.

2.12.1. Requirement. PE must be performed when directed by the original decision maker or higher authority, by commanders or senior leadership, or when prescribed by functional directives.

2.12.2. Responsibilities Assigned. The official who implements a program, or a higher authority, directs that PE be completed at a specific future date. Then the functional manager, with the financial analysis staff, establishes a plan to collect and maintain the cost and benefit data necessary for the evaluation.

2.12.3. Selection of programs for evaluation must allow sufficient lead time to allow collection of data that may not ordinarily be collected. If a new requirement for PE is established, the functional office should immediately notify all offices necessary to obtain appropriate data. If PE is to be recurring, a requirement for the retention of source data may be established.

2.12.4. Additional information on PE is found in AFMAN 65-506.

2.13. Forms Adopted. The following forms are adopted in this publication:

AF Form 2288 Request for Fast Payback Capital Investment (FASCAP) Funds

DD Form 1391 Military Construction Project Data

MICHAEL MONTELONGO
The Assistant Secretary of the Air Force for
Financial Management and Comptroller

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AFI 33-103 - Requirements Development and Processing

AFI 38-203 - Commercial Activities Program

AFI 38-301 - Productivity Enhancing Capital Investment Program

AFMAN 23-110 - USAF Supply Manual

AFMAN 64-110 - Manual for Weapon System Warranties

AFMAN 65-506 - Economic Analysis

DoD Instruction 5000.2 - Operation of the Defense Acquisition System

OMB Circular A-76 - Performance of Commercial Activities

OMB Circular A-94 - Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs

Abbreviations And Acronyms

ADP—Automated Data Processing

AFCAIG—Air Force Cost Analysis Improvement Group

AFSARC—Air Force Systems Acquisition Review Council

AoA—Analysis of Alternatives

CBA—Cost Benefit Analysis

CIO—Chief Information Officer

CSRD—Computer Systems Requirement Document

DAB—Defense Acquisition Board

DAU—Defense Acquisition University

DoD—Department of Defense

DoE—Department of Energy

EA—Economic Analysis

ECIP—Energy Conservation Investment Program

FASCAP—Fast Payback Capital Investment

FB—Facilities Board

FEA—Functional Economic Analysis

FOA—Field Operating Agency

IRR—Internal Rate of Return

IT—Information Technology

LCC—Life Cycle Cost

MAIS—Major Automated Information System

MAJCOM—Major Command

MCP—Military Construction Program

MFH—Military Family Housing

MFR—Memorandum For Record

MILCON—Military Construction

NAF—Nonappropriated Funds

NSS—National Security System

OCR—Office of Collateral Responsibility

OPR—Office of Primary Responsibility

OSD—Office of Secretary of Defense

PE—Program Evaluation

PECI—Productivity Enhancing Capital Investment

PIF—Productivity Investment Fund

PSD—Private Sector Development

ROI—Return on Investment

SPB—Simple Payback

SPO—System Program Office

SIR—Savings Investment Ratio

Terms

Alternative—An approach or program that is another possible way of fulfilling an objective, mission, or requirement. The status quo, or an upgrade to the status quo, is usually an alternative to a proposed course of action.

Benefits—Objective measures of an alternative's value to the United States. When a dollar value cannot be placed on comparable program or project benefits, other objective measures may be available and useful for comparing alternatives. Monetary benefits are receipts of the United States due, e.g., to sale of physical assets, or reductions in costs of other programs due to the action of the program under analysis.

Commercial or Industrial Activities—Activities that provide products or services obtainable (or obtained) from a commercial source. Commercial activities are operated by Air Force military or civilian personnel, or by contractor personnel.

Constant Dollar Value or Costs or Benefits—Value, cost, or benefits measured based on constant purchasing power of the dollar. That is, constant dollar analyses are done from the perspective of a constant general price level, though relative prices may vary.

Cost-Benefit Analysis or Cost-Effectiveness Analysis.—See Economic Analysis.

Current Dollar Value or Costs or Benefits—Value, cost, or benefit measures which include estimates of all expected future price changes. In current dollar analyses prices, costs, and other dollar-denominated measures are increased based both on anticipated year-to-year changes in the general price level and on anticipated changes in relative prices.

Discount Rate—The parameter used to translate future costs or benefits into present worth (see "Present Value" below). It is a measure of the time value of money.

Discounting—The process of using the discount rate to determine the present value of costs and benefits. (Elements of cost and benefit streams are multiplied by their corresponding discount factors to yield discounted costs and benefits.)

Economic Analysis—A systematic approach to the problem of choosing how to use scarce resources. It reveals the present value of the monetary costs and benefits associated with all alternatives under consideration, and provides as accurate and complete a picture as possible of nonmonetary costs and benefits.

Economic Life—The period of time over which the benefits to be gained from a project may reasonably be expected to accrue to the DOD. It is the shortest of physical, technological or mission life.

Life-Cycle Cost—The total cost to the government for a system over its full life, including the cost of development, procurement, operation, support, and disposal.

Present Value—The net value of a flow of funds, expressed as a single sum of dollars; effectively, the sum of money equivalent to all current and future flows. Calculated by multiplying the net cost figure for each year by the corresponding discount factor, and summing the results.

Program Evaluation—Analysis of ongoing actions to determine how well the stated objectives are being accomplished. Program evaluation studies entail a comparison of actual with intended performance.

Sensitivity Analysis—Examination of the effects obtained by changing the direction and magnitude of assumptions embodied in an analysis or key variables or factors in an analysis.

Terminal Value—The expected value of assets at the end of their economic life.

Attachment 2

MATRIX OF RESPONSIBILITIES FOR MILITARY CONSTRUCTION PROGRAM (MCP) AND MFH EAS

NOTE: *For Cost Data.

** For engineering data.

TASK	COMPTROLLER	ENGINEER	USER
Identify Need			OPR
Determine if EA Required	OCR	OPR	
Initiate Economic Analysis		OPR	
Develop Alternatives	OCR	OPR	OCR
Identify Data Requirements	*OPR	**OPR	OCR
Data Gathering	*OPR	**OPR	OCR
Data Analysis	OPR		
Recommend/Select Alternative	OCR	OPR	OCR
Identify Changes in Scope		OPR	
Documentation	*OPR	**OPR	
Certification	OPR	OCR	OCR